

REMARKS

In claim 1, the symbol "<->" has been deleted. In response to the rejection under 35 U.S.C. §112, second paragraph, claim 4 has been revised to delete the reference to "helicopter type" controls. For this reason, it is requested that this ground of rejection be withdrawn.

In paragraph 5 of the Office Action, claims 1-9 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over EP 0583666 to Bundo (the 666 patent) in view of Smith (the 003 patent).

Reconsideration is requested.

Claim 1 has been amended to point out that the claimed Aircraft also comprises a control system that is only of the propulsive type. The amended claim points out *inter alia* that the claimed aircraft according to the invention is free from moving or fixed control surfaces as are present in aircraft described in the prior art, and the claimed aircraft may hover both in normal and adverse atmospheric conditions (such as severe wind conditions) with any heading, i. e. with the longitudinal axis in any direction with respect to the wind.

The amendments to new claim 1 are supported by the description and by the drawings of the application as filed. The substance of cancelled 2 has been included in amended claim 1. The 666 patent only discloses an aircraft with aerostatic lift comprising a structure, which includes at least two non-rigid spindle-shaped elements side by side joined by at least one connecting element (1,3), said aircraft also being provided with a movement and control system.

The 666 patent also teaches the use of a classic type control system where the pilot directly controls the thrust of the motors and on the deflection of the moving aerodynamic surfaces (3). This patent does not teach the use of a motor that is adjustable as it is rotated around a vertical axis perpendicular to the rotation axis of said motor and to the connecting elements.

The thrust by the adjustment of the motors may be oriented to a horizontal plane but it does not have lever arm according to the z axis and it is not involved in control of the pitch of the aircraft. It is only slightly involved in the roll control. In other words, the motors according to the 666 patent are free to rotate in an horizontal plane and are fixed on a vertical arm extending from the connecting elements while being positioned at a distance from the centre of gravity of the aircraft in such a way that a system of forces and moments is provided with respect to all three barycentric axes of the airship for control and manoeuvring the aircraft in pitch, roll and yaw in any wind condition.

The airship of the 666 patent does not permit the hovering of the aircraft, with any heading to be maintained, independent of the wind direction and the use of a control system without the use of moving or fixed surfaces (4,5). For these reasons, then 666 patent neither discloses nor suggests any of the characterising features of amended claim 1.

The 003 patent discloses a lighter-than-air aircraft having a rigid platform with cargo and passenger compartments and gas bags attached to the platform for holding a gas having a density less than air, thus imparting lift to the platform. Along the sides of the platform are nacelles which house motors and propellers for providing the thrust to propel the aircraft in flight. The nacelles tilt so that the thrust derived from them may be used to change the elevation of the aircraft. Rudders for controlling the direction of flight are in the regions between the upper gas bags and in the regions between the lower gas bag. Said aircraft also being provided with a movement and control system with two motors mounted on the horizontal arm.

In the lighter-than-air aircraft of the 003 patent, it is possible to control the yaw rate, the roll rate and the pitch rate by means of the four tiltable nacelles (100) the lateral translation or the hovering in the presence of wind is only possible when the wind is a headwind.

According to the text of amended claim 1 the rotation of the propeller axes in the horizontal plane, together with the variation of the rotational speed of the propellers, allows the direction of the aircraft to be varied and also the absolute value of each thrust propeller 13. In this way, the aircraft 10 can be manoeuvred as to the pitch, roll and yaw.

In addition the control system according to the amended claim 1 also allows the translation in all the three orthogonal directions of the body axes x, y and z which may not be achieved in the aircraft according to the 666 patent and the 003 patent.


Further to the manoeuvrability in pitch, roll and yaw, it is also possible to utilize the directional and lateral trim control, and therefore control the hovering with any heading, i.e. with the longitudinal axis in any direction with respect to the wind.

For these reason, those who are skilled in the art, when faced with the problem of providing an aircraft having resistance to a side wind, based on a solely propulsive type control i.e. a control system free from moving or fixed control surfaces as the aircrafts according to the prior art, would not be directed to combine the 666 patent with the 003 patent to find a solution to the problem that the applicants have solved in the present application.

For these reasons, it is requested that this ground of rejection be withdrawn.

An early and favorable action is earnestly solicited.

Respectfully submitted,



James V. Costigan
Registration No. 25,669

Hedman & Costigan, P.C.
1185 Avenue of the Americas
New York, NY 109036
(212) 302-8989